AMENDMENTS TO THE CLAIMS:

Please amend claims 1-19, as shown below.

This listing of claims will replace all prior versions and listings of claims in the Application:

Claim 1 (currently amended): A method for measuring the chromatic dispersion of an optical link under test (LUT) ~~between two nodes of an optical network~~ comprising the steps of:

a) at a transmit end of ~~a link under test~~ said LUT, generating a two-color signal of a first wavelength and a second wavelength, each modulated with a digital signal, and transmitting ~~same~~ said two-color signal over said LUT;

b) changing said second wavelength with respect to said first wavelength with a detuning value to impose a known delay between said digital signal carried by said first wavelength and said digital signal carried by said second wavelength; and

c) measuring the bit error rate (BER) of said two-color signal for a plurality of detuning values to obtain a BER response.

Claim 2 (currently amended): A method as claimed in claim 1, further comprising the step d) of determining the dispersion of said LUT from said BER response.

Claim 3 (currently amended): A method as claimed in claim 1, wherein said step b) ~~of changing~~ comprises maintaining said first wavelength constant and changing said second wavelength with said detuning values.

Claim 4 (currently amended): A method as claimed in claim 1, wherein said step a) ~~of transmitting~~ comprises in-phase modulating each said first wavelength and said second wavelength with said digital signal.

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Claim 5 (currently amended): A method as claimed in claim 3, wherein said step a) ~~of~~ ~~in-phase modulating~~ comprises:

combining said first and said second wavelengths at the input of a modulator to obtain a combined optical signal; and

modulating said digital signal over said combined optical signal using said modulator.

Claim 6 (currently amended): A method as claimed in claim 1, wherein said step a) ~~of~~ ~~generating~~ further comprises, for a selected detuning value, changing the ratio between the launch powers of said first and second wavelengths to obtain a minimum BER.

Claim 7 (currently amended): A method as claimed in claim 2, wherein said step of determining the chromatic dispersion of said LUT comprises:

identifying from said BER response an uncorrelated-pattern regime defined by $BER(\tau) = BER(\tau+T_B)$, where τ is the group delay and T_B is the bit period of said digital signal; and

determining the relative group delay from said BER response for a plurality of ~~detunings~~ detuning values between said first wavelength and said second ~~wavelengths~~ wavelength.

Claim 8 (currently amended): A method as claimed in claim 2, wherein said step d) of determining the chromatic dispersion of said LUT comprises:

from said BER response, establishing a group delay response $\tau(\lambda)$;

determining a fit function which characterizes best said group delay response $\tau(\lambda)$ for said LUT;

choosing an arbitrary reference wavelength λ_{ref} for determining the parameters of said fit function fit; and

determining the chromatic dispersion of said LUT from said second order polynomial fit.

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Claim 9 (currently amended): A method as claimed in claim 2, further comprising determining the sign of the chromatic dispersion of said LUT.

Claim 10 (currently amended): A method as claimed in claim 2, further comprising:

inserting into said LUT a module with a known dispersion;

determining the chromatic dispersion of said two-color signal for a selected detuning value when said LUT includes said module; and

determining the sign of dispersion by comparing the chromatic dispersion of said LUT with and without said module.

Claim 11 (currently amended): A method as claimed in claim 2, further comprising:

delaying said digital signal modulated over said first wavelength by a fixed delay value τ_0;

identifying from said BER response a correlated-pattern regime where the differential group delay τ is less than two bit periods TB; and

determining the sign of the chromatic dispersion of said LUT from the sign on said fixed value.

Claim 12 (currently amended): A method as claimed in claim 11, wherein said fixed delay value is applied to said digital signal in one of the electrical and optical formats.

Claim 13 (currently amended): A dispersion measurement apparatus comprising:

a transmitter unit for generating a two-color signal and transmitting ~~same~~ said two-color signal over a link under test LUT;

a receiver for detecting a combined electrical signal from said two-color optical signal and measuring the bit error rate (BER) of said combined electrical signal; and

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a dispersion calculating unit for determining the chromatic dispersion of said LUT.

Claim 14 (currently amended): A dispersion measurement ~~unit~~ apparatus as claimed in claim 13, wherein said transmitter unit comprises:

a first transmitter and a second transmitter, each for generating a respective first wavelength and second wavelength;

~~means~~ a multiplexer for combining said first wavelength and said second ~~wavelengths~~ wavelength into a combined optical signal; and

an optical modulator[[,]] for modulating a digital signal over said combined optical signal to provide [[a]] said two-color signal.

Claim 15 (currently amended): A dispersion measurement ~~unit~~ apparatus as claimed in claim 14, wherein said second transmitter is a tunable transmitter for changing said second wavelength to vary the BER of said combined electrical signal.

Claim 16 (currently amended): A dispersion measurement ~~unit~~ apparatus as claimed in claim 13, wherein said dispersion calculating unit comprises ~~means~~ a generator for generating a BER response including a plurality of BER values measured for a plurality of values of said second wavelength.

Claim 17 (currently amended): An apparatus as claimed in claim 16, wherein said dispersion calculating unit further comprises:

~~means~~ a delay unit for constructing a group delay response $\tau(\lambda)$ from said BER response;

~~means~~ a compensating unit for determining, on said $\tau(\lambda)$response, a fit function for said LUT and calculating the parameters of said fit function for an arbitrary reference wavelength λ_{ref}; and

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~~means~~ a calculating unit for determining the chromatic dispersion of said LUT from said fit function.

Claim 18 (currently amended): An apparatus as claimed in claim 16, further comprising a memory ~~means~~ device for storing said BER response.

Claim 19 (currently amended): An apparatus as claimed in claim 17, further comprising a memory device for storing said BER response, said group delay response, and said fit function.

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AMENDMENTS TO THE DRAWINGS:

The attached sheet of drawings includes amendments to FIGS. 1A, 1B and 1C. This sheet, which includes FIGS. 1A, 1B, 1C and FIG. 2, replaces the original sheet including those figures. A marked copy of the amended figures is also enclosed.

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